

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: )  
TAE JIN EOM ET AL. )  
Serial No. 08/239,313 )  
Filed: May 6, 1994 )  
For: BIOLOGICAL DE-INKING )  
METHOD )

Examiner: Hastings, K.  
Art Unit: 1303

DECLARATION OF MASAHIRO SAMEJIMA UNDER 37 CFR § 1.132

MASAHIRO SAMEJIMA, PH.D., declares as follows:

1. I earned a Ph.D. in Science of Forest Products in 1982. Subsequently I have conducted extensive research in the fields of microbiology and enzymology in biodegradation of wood components, especially lignin and cellulose. I am currently an Associate Professor in the Department of Forest Products at the University of Tokyo, Tokyo, Japan. Attached is a copy of my Curriculum Vitae.

2. My declaration is based on my scientific experience and understanding of the subject matter as an expert in the art. I am a Japanese citizen and speak, read and write in the Japanese language. I also speak, read and write English fluently.

3. I have read the Japanese Patent 63-59494 ('494 patent) in the Japanese language. In my expert opinion, the '494 patent, read in its entirety, teaches one of ordinary skill in the art only the use of cellulase, either concurrently or sequentially, with deinking chemicals. It is also my opinion that the '494 patent does not teach or even suggest to those skilled in the art the use of cellulase alone for deinking waste papers.

4. I have read the Tae Jin Eom et al. U.S. Patent Application Serial No. 08/239,313, (Eom patent application) and the Office Actions dated November 7, 1995 and January 4, 1995. It

is my expert opinion that the interpretation of the '494 patent, made by the U.S. Patent Office, is incorrect in that the teaching of the '494 patent is mischaracterized by finding the '494 patent teaches use of cellulase alone, in the absence of deinking chemicals, to deink waste paper. The citation of the '494 patent is inadequate because the Examiner did not seriously consider the differences between cellulase use under alkaline conditions and acidic conditions. The election of the pH range to be used in the deinking process creates significantly distinctive ways of deinking waste papers. The method taught by the '494 patent uses an alkaline resistant cellulase under alkaline conditions created by well known deinking chemicals. The alkaline resistant cellulase and the alkaline conditions for deinking taught by the '494 patent are very different from the deinking process claimed in the Eom patent application. The '494 patent does not provide a teaching or suggestion that enables one skilled in the art to practice the method taught in the Eom patent application.

5. In summary, it is my expert opinion that the U.S. Patent Office has misinterpreted the '494 patent, and that at the time of the invention, the disclosure of the '494 patent taught the deinking of waste papers by the use of chemical deinking agents and cellulase, and did not teach or suggest the use of cellulase alone to deink waste papers.

6. The undersigned declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment or both under 18 U.S.C. § 1001, and that such willful false statements may jeopardize the validity of the above-referenced application or any patent issuing thereon.

Date: March 5, 1996

Masahiro Samejima  
Masahiro Samejima, Ph.D.

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**CURRICULUM VITAE (Documented at 29 February, 1996)**

Name: **Masahiro Samejima**  
(Given name) (Family name)

Age: **41 years old (born at 13th March, 1954 in Tokyo, Japan)**

Nationality: **Japanese**

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Education: **B.Sc. from University of Tokyo, Department of Forest Products, March, 1977**

**M.A. from University of Tokyo, Department of Forest Products, March, 1979**

**Ph.D. from university of Tokyo, Department of Forest Product, March, 1982**  
(Title of Ph.D. thesis: Studies on flavanols and related compounds from coniferous  
bark) under supervision of Prof. Tomotaka Yoshimoto.

Positions held after graduation:

**April 1982 - August 1983:** **Postdoctoral fellow in University of Tokyo,  
Department of Forest Products**

**September 1983 -December 1983:** **Visiting scientist in Pulp & Paper Research Institute of Canada  
(under supervision of Dr. Lubo Jurasek)**

**December 1983 - October 1990:** **Assistant professor in the University of Tokyo,  
Department of Forest Products**

**October 1990 - July 1992:** **Visiting scientist in the University of Georgia,  
Department of Biochemistry  
(under supervision of Prof. Karl-Erik L. Eriksson)**

**July 1992- July 1995:** **Assistant professor in the University of Tokyo,  
Department of Forest Products Science**

**August 1995 - Present:** **Associate professor in the University of Tokyo,  
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January 24, 1996

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JONES &amp; ASKEW

Dear Dr. Stults:

Thank you for your letter of December 27, 1995 in respect to the above identified case.

In reply to your inquiry, we would inform you as follows.

#### 1. Regarding Page 3, Third Paragraph:

Page 3, third paragraph of the English translation cited by the U.S. Examiner corresponds to page 2, left upper column, lines 3-5 of the JP'494 and its translation seems to be correct. We think, however, that the Examiner's interpretation on this portion is not inadequate.

That is to say, on referring to only this portion (page 3, third paragraph) of the English translation, this portion is apt to be misleading that "JP'494 teaches that the action of cellulase removes ink from the fiber, and it would be obvious to the skilled artisan to use cellulase alone, if the deinking action by cellulase alone gives sufficient deinking results, and if the additional expense of adding ink removal chemicals is not desired" as mentioned by the Examiner.

However, on page 2, left upper column, line 8 to right upper column, line 10 of JP'494 following to this portion

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(page 3, third paragraph of the English translation), there are descriptions stating that "Cellulase is known as an enzyme for hydrolyzing cellulose. Cellulase is inactivated in an alkali condition of pH8 or more. On the other hand, as a deinking is performed in the alkali condition, conventional cellulase cannot use therefor. However, in case alkali-resistant cellulase is used, it is activatable in the alkali condition. Therefore, if the deinking is performed by using alkali-resistant cellulase with a deinking agent (alkali), the deinking effect is improved due to the action of the enzyme".

Thus, on referring to the reference as a whole, we think that JP'494 discloses only the use of the alkali-resistant cellulase with the conventional deinking agent.

2. Regarding Page 5, First Whole Paragraph:

Page 5, first whole paragraph of English translation cited by the U.S. Examiner corresponds to page 2, left lower column, lines 13-15 of the JP'494 and its translation seems to be correct. We think, however, that the Examiner's interpretation on this portion is not inadequate.

That is to say, referring to only the portion (page 5, first whole paragraph) of the English translation, this portion is apt to be misleading that "Alkali-resistant cellulase can be independently used as one step in the ink removal process" as mentioned by the Examiner.

Please note, however, this portion is directed to explain a process for deinking by adding alkali-resistant cellulase. That is, on page 2, right upper column, line 18 to left lower column, line 18, there are descriptions stating that "an alkali-resistant cellulase treatment is performed by (1) adding alkali-resistant cellulase after the deinking agent (alkali) is applied or by (2) adding alkali-resistant cellulase with the deinking agent". Therefore, this portion is to be interpreted as "the alkali-resistant cellulase treatment" by adding alkali-resistant cellulase in accordance with the above steps (1) and (2) may be independently performed as one step. In other words, this portion is directed to the process according to example 3. In the example 3, the process comprises the steps of adding NaOH, nonionic surfactant and

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alkali-resistant cellulase to waste paper to disaggregate and, then, deinking by adding H<sub>2</sub>O<sub>2</sub> and sodium silicate as a further step. Therefore, this portion is not directed to show that alkali-resistant cellulase alone is used in the deinking treatment.

As mentioned above, we think that JP'494 teaches the use of enzyme as an enhancer to be used in addition to conventional deinking agents. Furthermore, we think that enzyme may be added concurrently with conventional deinking agents, or as a further step in addition to conventional deinking agents in the treatment of waste paper.

In this connection, under our practice, the cited reference should be read within the description of the specification, claims and drawings thereof. In other words, the prosecution history should not be considered. Therefore, we did not review the prosecution history of JP'494 at the present stage.

We trust that the above information is sufficient for your needs. Should you require any further information, please do not hesitate to write us.

We will send you our debit note with a confirmation of this letter by airmail.

Yours very truly,

MIYOSHI & MIYOSHI

  
\_\_\_\_\_  
Kouichiro Takaku  
Patent Attorney

KT/yn

Encl: Debit Note (by airmail)